

## WHAT IS CLAIMED IS:

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1. A ceramic envelope for high intensity discharge lamp made of a light transmission ceramics, comprising:

a cylindrical barrel section forming an electric discharge light emitting space;

an annular closing section that closes both ends of the barrel section, respectively;

a capillary section for inserting and fixing an electric discharge electrode to be outwardly protruded so as to be opposed to each other from a substantial center position of both closing sections,

wherein the barrel section thickness of at least one of the boundary sections between both of the barrel section and closing section is continuously increased at a ratio from 1.2 to 2.0 relevant to the thickness in the vicinity of the center of the electrical discharge light emitting space.

2. A ceramic envelope for high intensity discharge lamp made of a light transmission ceramics, comprising:

a cylindrical barrel section forming an electric discharge light emitting space;

an annular closing section that closes both ends of the barrel section, respectively;

a capillary section for inserting and fixing an electric discharge electrode to be outwardly protruded so as to be opposed to each other from a substantial center position of both closing sections,

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wherein a ratio of an inner diameter in the vicinity of an end of said barrel section to an inner diameter of the center of the barrel section is equal to or greater than 0.8 and is less than 1.

3. A ceramic envelope for high intensity discharge lamp made of a light transmission ceramics, comprising:

a cylindrical barrel section forming an electric discharge light emitting space;

an annular closing section that closes both ends of the barrel section, respectively;

a capillary section for inserting and fixing an electric discharge electrode to be outwardly protruded so as to be opposed to each other from a substantial center position of both closing sections,

wherein a surface roughness  $R_a$  of the interior surface of said barrel section is  $0.01 \mu\text{m}$  to  $0.4 \mu\text{m}$ , and the additive concentration in the vicinity of the interior surface of said barrel section is  $1/2$  or less of that in the vicinity of the center of the thickness.

4. A ceramic envelope for high intensity discharge lamp made of a light transmission ceramics, comprising:

a cylindrical barrel section forming an electric discharge light emitting space;

an annular closing section that closes both ends of the barrel section, respectively;

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a capillary section for inserting and fixing an electric discharge electrode to be outwardly protruded so as to be opposed to each other from a substantial center position of both closing sections,

wherein the barrel section thickness of at least one of the boundary sections between both of the barrel section and closing section is continuously increased at a ratio from 1.2 to 2.0 relevant to the thickness in the vicinity of the center of an electric discharge light emitting space, and a ratio of a diameter in the vicinity of an end of the barrel section to a diameter of the center of the barrel section is equal to or greater than 0.8, and is less than 1.0.

5. A ceramic envelope for high intensity discharge lamp as claimed in any of claims 1, 2, and 4, wherein the surface roughness  $R_a$  of the interior surface of the barrel section is from  $0.01 \mu\text{m}$  to  $0.4 \mu\text{m}$ , and the additive concentration of the surface of said barrel section is  $1/2$  or less of that in the vicinity of the center of the thickness.

6. A ceramic envelope for high intensity discharge lamp as claimed in claim 3 or 5, wherein an additive consists of at least one or more kinds of  $\text{Sc}_2\text{O}_3$ ,  $\text{MgO}$ ,  $\text{ZrO}_2$ ,  $\text{Y}_2\text{O}_3$ , and lanthanoid based rare earth oxide.

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